Media Portrayals of Medical Authority and Narratives of Blame:

A Content Analysis of the 2015 California Measles Outbreak

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Abstract

News coverage of health crises often uses episodic framing to attribute blame for disease to individuals, rather than systems. To understand media framing of a vaccine-preventable disease, this study considered how narratives of blame and medical authority were depicted in news coverage of the 2015 California measles outbreak. Specifically, this study examined newspaper coverage from two outlets, the *Los Angeles Times* and the *Marin Independent Journal*, to conduct a content analysis of 53 articles. Results revealed that individuals bore the brunt of responsibility for the measles outbreak, but fewer attributions of blame were assigned to individuals in the *Marin Independent Journal.* Public health officials and medical professionals were the most common information sources as well as the most common sources to attribute blame for the measles outbreak. These results reveal that news outlets may alter framing patterns to reflect the beliefs of readers. Additionally, this study reveals the ascent of public health officials, their prominence as *elite* sources, and the development of their autonomy and individual authority—substantiated by their role in this public health crisis—distinct from medical professionals.

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Preface

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Introduction

Amusement parks create spaces of escape, fantasy, and spectacle for the masses (Nye, 1981). Disneyland—located in Anaheim, California—represents one of the industry standards for modern amusement parks, and its creator Walt Disney envisaged Disneyland as a pleasure playground for the family, bringing adults and children together (Weinsten, 1992). Yet, for some visitors to Disneyland theme parks in December 2014, their visit amounted to a public health nightmare. When a measles outbreak the following month was traced to Disneyland, the amusement park suddenly became a spectacle of disease, contagion, and colliding international health standards.

This spectacle emerged with individual measles cases that coalesced into an "outbreak." For instance, infants too young to receive vaccination were particularly at risk; *U.S. News & World Report* stated that as of January 26, four cases of measles were attributed to patients under a year old, while nine were present in children aged one to four (Leonard, 2015). The presence of measles among infants and children had implications for spaces shared by others with immature or weak immune systems; for instance, on February 2, the diagnosis of a baby less than a year old meant that an infant care center where the baby was enrolled had to be closed (Neporent, 2015). A measles outbreak can be especially worrisome not only because it is highly contagious—passing through direct contact, the air, and surfaces—but also because many medical professionals, especially younger doctors, are not experienced in diagnosing what is now an uncommon disease, which has been on the wane (Brown, Lin & Xia, 2015). And, it was not only young children who were susceptible to measles and contracted the disease. Indeed, the majority of people affected by the measles outbreak were over twenty. In

sum, young and old—aged seven months to seventy—contracted a strain of measles linked to the Disney theme park.

Disneyland's multi-generational appeal creates a high-traffic visitor space, which was a vulnerable site for infectious disease transmission. In turn, the outbreak underscored the theme park's attraction to international tourists from countries with vaccination standards that differ from the U.S. Amusement park tourists can travel from places where vaccine-preventable diseases, such as measles, are still commonly prevalent, and thereby serve as carriers for the disease.

Vaccine requirements in the United States have vastly changed the general landscape of infectious disease transmission, and the experience of contracting a vaccine-preventable disease, such as measles. The Centers for Disease Control and Prevention (CDC, 2015) states that measles is a contagious viral disease that is most common during childhood. In 2000, the United States declared measles eliminated; however, elimination does not signify the complete absence of measles cases, but rather the absence of continuous disease transmission for a year or more (CDC, 2015). Elimination is largely attributed to the measles vaccine—which is commonly given during infancy as a two-shot series vaccine for measles, mumps, and rubella (Cleveland Clinic, 2011).

Despite both the continued administration of the vaccine and the disease's elimination status, a limited number of measles cases do occur in the U.S. The CDC (2015) reported that 169 measles cases occurred between January 1 and May 1, 2015. These cases were all linked with an outbreak at the Disneyland amusement park in California (California Department of Public Health, 2015).

The Mayo Clinic (2015) notes that most cases of measles reported within the United States originate outside the country. For instance, the 2015 measles virus type matched the virus type responsible for a large measles outbreak in the Philippines in 2014 (CDC, 2015). Additionally, the CDC links the 2014 Philippines measles outbreak with a high number of cases within the U.S. during 2014. Notably, the U.S. 2014 outbreak largely affected a homogenous patient group: unvaccinated Amish communities in Ohio. The homogeneity of this group of measles patients—including their shared geographic residence—contrasts sharply with the diversity of Disneyland theme park tourists, visiting from both domestic and international places. Within the U.S., twenty states and the District of Columbia reported measles cases linked to the Disneyland outbreak.

This outbreak became noteworthy, in part, because Disneyland provided a unique space for the transmission of a disease that had previously been declared eliminated. The Disneyland outbreak received wide media attention because it not only represented a public health risk, but also a purported example of the effects of an anti-vaccination movement and conflicting international health standards.

This study seeks to examine how mediated narratives of blame provide a schema for message framing, particularly in a medical and health-centric context. It describes the importance of media framing as a mechanism for establishing individual and society-based responsibility. To that end, it assesses the role of "the other" as an oft-used scapegoat in medical crises, and the attribution of blame to individuals or groups as a solution or medical explanation. This study's findings are relevant to public health departments and health communication professionals who are working in vaccine-preventable disease contexts. The literature review provides examples of existing

literature on vaccine-preventable disease in the fields of communication and sociology. It also evaluates the role of medical authority and medical sources in media representations. And finally, it discusses the emergence of anti-vaccination trends among parents as an example of medical authority resistance.

Literature Review

Narratives of Blame

In a monograph on blame narratives in the media, Wendy Wyatt (2012) noted that news stories centered on conflict often include blame as an essential element or outcome. According to Wyatt, blame is usually present in two forms: first, when news sources within media stories cast blame on other parties; and second, when journalists—and the news narratives they create—portray culpability for perceived wrongdoing as both blameworthy and newsworthy.

Blame, as the underpinnings of a narrative of responsibility, is part and parcel of a media master myth. Jack Lule (2002) forwarded the notion that journalistic content is constructed from and representative of seven master myths. Three of these master myths comprise a continuum of narratives of blame, including the myth of the victim, the scapegoat, and the hero. Similarly, Seale (2003) argued that journalistic content uses meta-narratives of opposition—which are a parallel construction of master myths—such as villains and freaks, victimhood, and professional heroes. A master myth attributes blame, or at least responsibility, to the aforementioned ideal types and demonstrates the at-times reductive approach of blame depictions in the media. In essence, a master myth provides a schema for message framing, which orders reality in a particular way and then emphasizes that order with stories of conflict. Frames represent a mechanism to establish

a problem or event and its relevant actors within a news story. For instance, story framing can select and develop aspects of a social reality, such that it depicts a latent theme and narrative (Hallahan, 1999; Entman, 1993).

Story framing that develops a narrative of blame and responsibility is a significant component of health messages, including media coverage (Oh & Zhou, 2012). To that end, story frames that create narratives of blame about health issues can lead to the mis-assignment of blame to individuals—often laypeople—rather than social factors or health institutions (Coleman, Thorson, &Wilkins, 2011; Heller, 2015). Additionally, Lupton (1993) found that health-related media often blames individuals who are already ill or suffering from a health malady, rather than individuals who are unaffected by a health issue or environmental factors that help create a malady.

Framing Vaccine-Preventable Outbreaks

Framing is a theoretical perspective that defines the communication process of selecting and making information salient, which thereby guides the reader's interpretation. Entman (1993) identifies four essential frame functions: defining problems, diagnosing causes, making moral judgments, and suggesting remedies. To that end, frames can organize, represent, and resonate with the belief systems of the communicator and reader, or message receiver. For instance, a blame frame used to describe ill individuals may resonate with message receivers who share a belief system that ill people are blameworthy.

Media framing tends to be episodic or thematic. Episodic framing emphasizes individual responsibility; conversely, thematic framing examines context and society's responsibility for an issue (Iygenar, 1996; Altheide, 1997). This distinction between

episodic and thematic framing is particularly relevant in communication studies of health-related media coverage, wherein responsibility for disease is often attributed to a specific individual or group.

The present study examines media coverage of a vaccine-preventable disease outbreak within the United States. Existing communication research on vaccine preventable disease has centered on the human papillomavirus (HPV) and the HPV vaccine. To date, many studies examining media representations of the HPV vaccine have focused on medical information accuracy; the comprehensiveness of health information; and the concentration of coverage on the HPV vaccine and related health matters, such as vaccine procedure and prevention effects. Media coverage, including newspaper articles and online articles, has also been analyzed to determine the prevalence of risk messages about the HPV vaccine and its perceived safety (Abdelmutti & Hoffman-Goetz, 2009; Anhang, Stryker, Wright & Goldie, 2003; Calloway, Jorgensen, Saraiya & Tsui, 2006). Generally, the aforementioned studies that examine media representations of HPV focus on the presence or absence of medical information, rather than latent themes, such as narratives of blame. Indeed, personal accounts were often overlooked or marginalized in media coverage in lieu of health or medical information about the virus as an emerging health threat (Johnson, Sionean & Scott, 2011). Thus, information or depictions of patient-provider relationships and roles often become secondary players to the disease itself within news stories.

In contrast, other studies of media representation of infectious diseases that are vaccine preventable, such as measles, mumps, and rubella (MMR), emphasize the agency of parents and medical professionals (Smith, Ellenberg, Bell & Rubin, 2008). By bringing

in the patient, these studies also manage to illustrate the personal and emotional quality that vaccination, as a preventative measure and public health action, may have. For example, Guillaume and Bath (2008) found that in an analysis of 78 British news articles about a 2002 measles outbreak, 44 articles depicted the suffering of children, who often experienced measles, mumps, rubella as a result of foregoing vaccination. These depictions portrayed children as victims of a controversy between parents and authoritative bodies. In a topically related review of positive coverage of immunization in Australia over a four-and-a-half year period, low immunization rates were blamed on parents or uncoordinated government bodies (Leask & Chapman, 2002). This attribution of blame to separate parties represents the uneven responsibility of partial and impartial bodies with differing levels of power.

A study by Holton, Weberling, Clarke, and Smith (2012) epitomized the controversies that news coverage can highlight by focusing on vaccine-preventable disease. This study best united themes of medical authority and a narrative of blame, while also inverting the common representation of the medical professional as hero and the patient or parent as the blameworthy scapegoat or victim. The researchers examined 281 newspaper articles about the controversy created by Andrew Wakefield's 1998 finding—documented in the British medical journal *The Lancet*—that the MMR vaccine was linked with autism. Holton and colleagues identified nine possible frames for directing blame, including toward the generator of the controversy, Andrew Wakefield, and toward society (which includes parents and family), and medicine. The analysis found that Wakefield was the most common blame frame; almost 40 percent of the sample articles attributed blame to him, followed by attribution of blame to science and

the medical community (27.9%) and society (15.8%). This study evinced the construction of episodic framing that pins blame on a single individual—Andrew Wakefield—and thematic framing that blames an institution—science and medicine.

Medical Authority

Despite the downfall and blameworthiness of Wakefield as a medical professional, the findings of Holton et al. (2012) represent important indicators of the prominence of science and medical professionals within media representations. Science/medical sources were the predominant source cited in attribution of blame for the MMR vaccination controversy, and comprised 67.3 percent of the sources attributing blame within news stories. This joint finding, regarding targets of blame and the source of blame attribution, points to the notion that Wakefield is an anomaly and that the profession of medicine maintains a dominant foothold as a credible source in media depictions of health issues.

The dominance of medical professionals in news stories is evident in other examinations of health-related news coverage. For instance, a review of immunization in the Australian press conducted by Leask and Chapman (2002) found that medical providers were the least likely party to be blamed for low immunization rates: only four percent of articles attributed blame to providers. Conversely, Leask and Chapman found that medical providers or spokespersons were second only to politicians as privileged sources with the authority to make blame attributions. A separate study's results reinforce the strong presence of medical providers: individual scientists, researchers, or medical providers were cited in about 63 percent of articles about breast cancer, in comparison to lay people, who were cited 35 percent of the time (Atkin, Smith, McFeters & Ferguson,

2008). Overall, research documents that news coverage of medical and health issues favors the use of medical professionals as news sources.

Accordingly, Boyce (2006) stressed that journalists rely on sources with known *expertise*, evidenced in titles, credentials, and affiliations. Conrad (1999) found that science journalism—an umbrella term that includes medical and health issue coverage—is heavily reliant on such sources to provide the information and robust content of news stories. Conrad found that the accounts of lay people, namely patients, were absent or marginalized in favor of statements and information from expert sources, findings later substantiated by similar research (Johnson, Sionean, & Scott, 2011). The utilization of medical or scientific expert news sources is consistent with a trend to feature *elite* news sources, who have a public persona, as well as political and economic power (Cross, 2010, p. 414).

Both Boyce and Conrad uncovered a tension between the level of prestige and institutional authority of medical news sources and their level of knowledge about a health-specific topic. For instance, Shepherd (1981) found that news content about scientific medical findings related to medical marijuana used sources who were leading administrators of institutions or organizations, yet their high-level profiles did not mean that they had a strong knowledge base about marijuana. This group of studies suggests that medical authority has two components: first, scientific or technical "expert" knowledge, and second, prestige and leadership profile within the scientific community (Entwistle, 1995).

The conflict over the primacy of knowledge and institutional authority is evident in other medical contexts, namely vaccination trends. In a critical review of scholarship

on vaccination attitudes Yaqub, Castle-Clarke, Sevdalis and Chataway (2014) found that medical and government institutions' credibility was paramount, particularly in comparison with information content about vaccination. Similarly, trust and public confidence in medical professionals themselves, rather than information content, engendered increased positive attitudes toward vaccination and intention for vaccine uptake (Leask, Chapman, Haw, & Burgess 2006; Omer, Salmon, Orenstein, deHart & Halsey, 2009).

Conversely, anti-vaccination trends represent the coalescence of distrust and low public confidence in vaccination (Peretti-Watel, Raude, Sagaon-Teyssier, Constant, Verger & Beck, 2014; Omer et al., 2009; Epling, Savoy, Temte, Schoof & Campos-Outcalt, 2014). Despite state-based requirements for immunization upon school attendance, many parents request exemptions from their children's doctors or change their children's vaccination schedule from the schedule recommended by their health practitioner (Wang, Clymer, Davis-Hayes, & Buttenheim, 2014). Blume (2006) noted that anti-vaccination sentiment in the U.S. is not a new phenomenon; in fact, it originated in the late nineteenth century with the creation of the Anti-Vaccination Society in lieu of compulsory vaccination legislation. Unfortunately, vaccine refusal not only affects the individual health of the patient, but may also risk *herd immunity* thresholds—which had not been achieved at the inception of the Anti-Vaccination Society (Buck & Gatehouse, 2015). Herd immunity is reached when vaccine coverage among a specific population is high enough to protect unvaccinated individuals from disease (Tolsma, 2015).

The Disneyland outbreak of measles is not the first outbreak of a vaccine-preventable disease. For instance, a large outbreak of pertussis (known commonly as

whooping cough) occurred in California in 2010. While several factors, including the efficaciousness of the vaccine type, affected this outbreak, researchers determined a statistically significant relationship between vaccine refusal and increased pertussis cases (Atwell, Van Otterloo, Zipprich, Winter, Harriman, Salmon, Halsey & Omer, 2013).

Today, the anti-vaccination movement is emblematic of the power-charged hierarchy present in any relationship between a medical authority—including vaccine manufacturers—and patients or laypersons. Indeed, while anti-vaccine sentiments are complex and the product of many perspectives, they still exude a potential dislike of opaque scientific and medical institutions or practices (Epling, et al., 2014). Some scholars have labeled parental concerns over vaccination a form of *hesitancy* (Strelitz, Gritton, Klein, Braford, Follmer, Zerr, Englund & Opel, 2015). Yet, it appears that the interventions of a physician and his or her expertise have been insufficient in overcoming hesitancy in vaccine uptake (Sadaf, Richards, Glanz, Salmon & Omer, 2013).

Summary and Research Questions

Like the pertussis outbreak before it, the California measles outbreak of 2015 again draws comparisons to vaccine refusal. These comparisons are evident in media coverage of the outbreak. The initial uncertainty of the measles outbreak's source and its carrier(s) fueled news coverage, particularly within the state of California. The present study seeks to analyze media representations of the 2015 measles epidemic linked to a Disney theme park, with an emphasis on news coverage in California. Specifically, content analysis is used to examine newsprint media from January 2015 to April 2015—the period of the outbreak's duration.

Most previous studies consisting of content analyses of disease in the media have examined non-vaccine-preventable diseases, such as SARS, or have examined non-infectious disease, such as HPV. With the exception of the HPV vaccine, a paucity of research exists in the U.S. concerning the social reality of immunization as presented by media. The present study contributes to an existing body of literature by examining a recent event through the theoretical perspectives of framing. This study will present a quantitative analysis of media portrayals of public health responsibility—in terms of individual and external responsibility, the role of medical authority, and source credibility. Specifically, the content analysis will code for two themes: a narrative of blame and medical authority and ask the following research questions:

RQ1: How did media coverage frame attribution of blame for the measles outbreak?

1a. How did media coverage frame attribution of blame for individuals verses systems?

1b. When the media attributed blame, what kinds of individuals were blamed?

1c. When the media attributed blame, what kinds of systems or institutions were blamed?

RQ2: What types of sources were privileged in the media coverage of the measles outbreak?

2a. What type of credentials were cited for medical sources?

2b. What types of affiliations were cited for medical authorities?

2c. Which public medical authority level (local, state, or federal) was most often cited?

2d. What types of layperson were most often cited?

RQ3: What types of sources were used to make blame attributions for the measles outbreak?

Method

According to Berelson (1952), content analysis provides an "objective, systematic, and quantitative description of the manifest content of communication" (as quoted in Budd, Thorp & Donohew, 1967, p. 3). Furthermore, Krippendorff (1980) noted that these three characteristics of content analysis, and content analysis' examination of manifest content, can provide replicable results when reliability is established, thereby enhancing a study's contributions to an existing body of literature and extending its temporal relevance.

The utilization of content analysis elevates the scholarly relevance of the present study's emphasis on communication content related to public health risks. Content analysis results can reveal cultural patterns—including attitudes, values, and interests—of population groups (Krippendorf, 1980). To that end, the present study seeks to use content analysis to understand attributions of responsibility and blame during an unexpected public health crisis and the role of medical authority as a source presented in the news media. This study's use of this research technique follows an established precedent, based in communication literature, of thematically related studies that examine media representations of disease and vaccine preventable disease by employing content analysis (Abdelmutti & Hoffman-Goetz, 2009; Atkin et al., 2008; Holton et al., 2012).

Sampling Frame

Because the present study focuses on media representations of the 2015 California measles outbreak, the sampling frame includes articles from all stages of the outbreak. Transmission of the disease began at the end of December in the Disneyland theme park. Therefore, articles were retrieved from January 1, 2015 through May 1, 2015 to cover the

period of initial measles symptom presentation, contagion, and the declared end of the outbreak. Articles from two California-based news outlets were chosen to provide insight into regional and national news coverage in the state that contained the highest number of measles cases post-outbreak. The selection of two outlets offered an appropriate amount of data for the scope of this study. The *Los Angeles Times* was chosen as a newspaper with a national reach; according to the Alliance for Audited Media (2013), the *Los Angeles Times* has the fourth highest total average circulation nationwide. Additionally, this newspaper's headquarters share a close geographic proximity to the initial measles transmission in Anaheim, California. As such, this news outlet offers content about an issue of local interest, read by a local and national audience. The second outlet chosen was the *Marin Independent Journal*. This outlet was chosen for two reasons: 1) the high amount of coverage generated about the measles outbreak in comparison to other regional newspapers 2) the newspaper is based in Marin County, which boasts one of the highest rates of vaccine exemptions in the state. The contrasting nature of these newspaper audiences, based on both regional proximity to the news source and the cultural differences and belief systems of the readers, could result in the production of different journalistic content. The newspaper outlet selections offer a juxtaposition between regional and national coverage of an outbreak that put California in the national spotlight because of its lenient policies toward vaccination standards. The inclusion of both outlets, based on distinctive reaches and audiences, could reveal how newspapers construct content in accordance with audience beliefs and interests.

LexisNexis Academic was utilized to retrieve articles within the sampling frame. The search term "measles outbreak" was used to generate articles within the sampling

frame. The aforementioned search criteria yielded 45 articles from the *Los Angeles Times* and 30 articles from the *Marin Independent Journal*. Upon further review of the articles produced in the LexisNexis search, content that did not meet the criteria of articles (such as letters to the editor or opinion editorials) was excluded from the final sample. This study focused on news coverage to understand how medical authorities were presented as sources to illuminate not only the nature of the health crisis, but also the scope of responsibility from a purportedly objective standpoint. By reviewing news articles, rather than opinion-editorials, this content analysis focused on information-centric content intended to inform readers about the evolution of the public health crisis as an event, rather than commentary that interpreted the event for readers. In other words, news content and opinion-editorials present two versions of social reality; this study focused on the media presentation—under the assumption that news articles present objective and verifiable information—of the outbreak. Additionally, articles deemed to contain unrelated content to the measles outbreak were excluded. As a result, 32 articles from the *Los Angeles Times* And 21 articles from the *Marin Independent Journal* were analyzed, yielding a total sample of 53 articles.

Coding Instrument

A codebook and coding instrument were developed to analyze the sample of articles for manifest content (see Appendix A). The coding scheme distilled the present study's focus on two categorical themes: narratives of blame and medical authority. These two categorical themes were broken down into eight variables to reflect manifest content within the entirety of each article, including dominant blame frame, blamed individuals, blamed systems, types of source, credentials, affiliations, public medical

authority levels, layperson sources, and privileged sources. Newspaper articles were also coded as either national or regional coverage level, based on the outlet. An explanation of each of these variables is provided below.

The codebook drew on the categorical themes related to blame established by Holton and colleagues (2012) to study blame frames used in the MMR-Autism controversy. First, two separate variables for episodic and thematic blame frames were used to determine blame attribution toward individuals verses systems or institutions. In the first variable for blamed individuals, the coder identified the presence of individual actors to whom blame was attributed in each news article. Individual actors included: anti-vaccination parents, unimmunized international travelers, measles patients, unvaccinated people, state-elected officials, and other. Next, system or thematic codes were utilized to address the presence of systems or institutions to whom blame was attributed in each news article. System actors included: media, the state legislature, government, Disneyland, society, science/medicine, anti-vaccination movement, schools, and other. Finally, the dominant blame frame—as determined between individuals and systems—was coded as a third, related variable. This code identified the dominant blame frame used in each news article, noting that articles could, and often did, include blame frames for both individuals and systems. Dominant frame was determined by counting and comparing the total number of individual blame frames versus system blame frames. Qualitative judgment was used in the case of equal blame frames to determine the dominant frame used in an article.

To examine the use of scientific/medical sources and the display of source prestige within news representations, articles were coded for type of source, source

credentials, and affiliations, with a specific emphasis on medical sources (Conrad, 1999; Boyce, 2006; Shepherd, 1981). In particular, the variable *source*—and related variables—focused on the differentiation between public health authorities and medical authorities associated with a medical or professional body other than a government agency.

The variable *source type* was used to identify the presence of one of seven types of potential medical sources featured: public health personnel, medical professional, scientist, CDC, professor, elected government official or spokesperson, and other.

The second source variable, *credentials*, identified the specific credentials of the cited sources, including: public health official, epidemiologist, infectious disease expert, pediatrician, MD, emergency physician, RN, professor of medical subject, professor of non-medical subject, and other.

The third source variable, *affiliations,* determined the affiliations of cited sources including: department of health, California hospital, California hospital affiliated with a university, non-California hospital, non-California hospital at university, California university, non-California university, government agency, advocacy organization, national clinic, private clinic, and other. The final source variable, *level of authority*, presented a code for the level of regional authority public medical sources had including: county, city, state, federal, not stated, and other.

Laypersons as sources in media articles were also coded. Boyce (2006) emphasized the juxtaposition of laypersons cited as sources alongside sources with medical expertise. As such, the codebook included layperson sources as a separate variable. The code identified the presence of laypeople used as sources, including: pro-vaccination parent, anti-vaccination parent, international traveler, and other.

Following Leask and Chapman (2002), the present study coded for type of privileged sources, based on who was endowed by the media with the privilege to blame either individuals or systems for the measles outbreak. Coded sources included: academic journal, university-led experts, anti-vaccination advocate organization, public health official, medical authority, government official, pro-vaccination parents, anti-vaccination parents, and other. Finally, articles were coded based on regional or national coverage levels to determine if coding patterns were distinct based on coverage level.

Inter-coder reliability was established by the researcher and her advisor by testing the draft codebook on a sample of eight articles from the *Pasadena-Star News* and the *San Jose Mercury News*. These news outlets were chosen because they mimicked the distinct readership levels between the *Los Angeles Times* and the *Marin Independent Journal*. On the first test attempt, agreement was 100 percent, with the exception of three variables: blamed individuals (85%), blamed system (80%), and privileged sources (60%). Revisions were made to the codebook and the revised codebook was tested on a new sample of eight articles from the same news outlets. Upon the second test for inter-coder reliability, 100 percent agreement was reached on all eight variables. After reaching this consensus, it was determined the coding instrument was complete. The author then coded the full sample of 53 articles for data collection.

Results

Table breakdowns for each of the research questions can be found in Appendix B. Research question1 examined how media coverage framed attribution of blame for the measles outbreak. To answer this question, research question 1a compared how media coverage framed attribution of blame for individuals and systems. Results revealed that 74 percent of the articles included a blame frame directed toward a system or individual. Further breakdown revealed that 57 percent of these articles presented a dominant blame frame directed specifically toward individuals, whereas only 17 percent of articles blamed systems. Blame attributions made in articles by media outlets with national and regional reach were also examined separately. In the *Los Angeles Times*, 84 percent of the articles presented a blame frame directed at a system or individual. Of the articles depicting a blame frame, 69 percent of articles depicted blame frames directed toward individuals, and16 percent directed blame toward systems. In the *Marin Independent Journal*, 57 percent of the articles presented a blame frame directed at a system or individual. Individuals were blamed more often, with 38 percent of articles depicting blame frames directed toward individuals and 19 percent directed toward systems. Overall, blame attributions were most frequently directed toward individuals than systems.

Research question 1b examined what types of individuals were targeted in articles that included blame attributions. Results revealed that unimmunized individuals were blamed in 85 percent of articles; anti-vaccination parents were blamed in 36 percent of articles; international unimmunized travelers were blamed in 21 percent of articles; and measles patients were blamed 13 percent of the time. Thus, unimmunized individuals

bore the brunt of responsibility for the measles outbreak. Next, the types of individuals blamed in articles by the media outlets with national and regional reach were examined separately. In the *Los Angeles Times*, unimmunized individuals were blamed in 85 percent of the articles, anti-vaccination parents were blamed in 41 percent of the articles, international unimmunized travelers were blamed in 26 percent of the articles, and measles patients were blamed in 15 percent of the articles. In the *Marin Independent Journal*, unimmunized individuals were blamed in 83 percent of the articles, anti-vaccination parents were blamed in 25 percent of the articles, international unimmunized travelers and measles patients were each only blamed in one article, together representing 16 percent of the total blame attributed to individuals.

Research question 1c examined what types of systems were targeted in articles that included blame attributions. Results revealed that the state legislature was blamed in 33 percent of the articles, the anti-vaccination movement was blamed in18 percent of the articles, Disneyland was blamed in 10 percent of articles, generic science/medicine was blamed in five percent of articles, society was blamed in five percent of articles, the media was blamed in three percent of articles, and schools were blamed in three percent of the articles. Next, the types of systems blamed in articles by the media outlets with national and regional reach were examined separately. In the *Los Angeles Times*, the anti-vaccination movement was blamed in 26 percent of articles that included a blame frame, Disneyland was blamed in 15 percent of articles, the state legislature was blamed in 15 percent of articles, science/medicine was blamed in seven percent of articles, society was blamed in seven percent of articles, the media was blamed in four percent of articles, and

schools were blamed in four percent of articles In the *Marin Independent Journal*, the state legislature was blamed in 75 percent of articles with blame frames.

Research Question 2 examined what types of sources were privileged in the media coverage of the measles outbreak. Coding of the total sample revealed that public health officials accounted for 43 percent of cited sources, medical professionals accounted for 30 percent of sources, professors accounted for nine percent of sources, the CDC accounted for eight percent of sources, elected government officials or their spokespersons accounted for eight percent of sources, scientists made up two percent of sources, and "other" accounted for two percent of sources. The types of sources cited in articles by the media outlets with national and regional reach were also examined separately. In the *Los Angeles Times*, public health officials represented 27 percent of cited sources, medical professionals represented 23 percent of sources, professors comprised seven percent of sources, the CDC represented six percent of sources, elected government official or spokesperson represented three percent of sources, "other" represented two percent of sources, and a scientist represented one percent of the cited sources. In the *Los Angeles Times* coverage, a total of 104 medical sources were cited. In the *Marin Independent Journal* public health officials comprised 63 percent of cited sources, medical professionals comprised 25 percent of cited sources, elected government officials or spokespersons comprised 18 percent of cited sources, the CDC and professors each comprised eight percent of cited sources, and scientists made up three percent of cited sources. In the *Marin Independent Journal* coverage, total of 49 medical sources were cited.

Research question 2a examined what types of credentials were associated with cited medical sources. Results revealed that 26 percent were cited as public health officials, 23 percent were cited as medical doctors, 19 percent were cited as pediatricians, 11 percent were cited as professors of medical subjects, eight percent were cited as epidemiologists, eight percent as infectious disease experts, four percent were coded as *other*, and a little over one percent were cited as registered nurses. Results revealed that no sources exhibited the credentials of either an emergency physician or a professor of a non-medical subject. In total, 135 credentials were coded in the sample of articles. The types of credentials cited in articles by the media outlets with national and regional reach were also examined separately. In the *Los Angeles Times* 24 percent were cited as public health officials, 22 percent were cited as pediatricians, 20 percent were cited as medical doctors, 11 percent were cited as a professor of a medical subject, ten percent were cited as epidemiologists, eight percent were cited as infectious disease experts, three percent were cited as *other*, and one percent was cited as registered nurse. In total, 88 credentials were coded in the *Los Angeles Times*. In the *Marin Independent Journal*, 30 percent were cited as public health officials, 28 percent were cited as medical doctors, 14 percent were cited as pediatricians, nine percent were cited as a professor of a medical subject, seven percent were cited as an infectious disease expert, seven percent were cited as *other*, two percent were cited as an epidemiologist, and one percent of credentialed sources were cited as a registered nurse. In regional coverage, 43 credentials were coded.

Question 2b examined the types of affiliations cited for medical sources. Results showed that 42 percent of medical sources were affiliated with a department of health, 20 percent of sources were affiliated with a government agency, nine percent of sources

were affiliated with a California university, nine percent were affiliated with a private clinic, six percent were affiliated with a California hospital associated with a university, four percent were affiliated with a non-California university, four percent were affiliated with *other*, four percent were affiliated with an advocacy organization, two percent were affiliated with a non-California hospital, and one percent were affiliated with a non-California hospital associated with a university. No sources were affiliated with either a stand-alone California hospital or a national clinic. The types of affiliations cited in articles by the media outlets with national and regional reach were also examined separately. In the *Los Angeles Times* 37 percent of sources were affiliated with a department of health, 19 percent were affiliated with a government agency, 11 percent were affiliated with a private clinic, nine percent were affiliated with a California university, seven percent were affiliated with a California hospital associated with a university, four percent were affiliated with a non-California university, four percent were affiliated with an advocacy organization, four percent were affiliated with *other*, three percent were affiliated with a non-California hospital, and one percent was affiliated with a non-California hospital affiliated with a university. In the *Marin Independent Journal*, 52 percent of sources were affiliated with a department of health, 22 percent were affiliated with a government agency, seven percent were affiliated with a California university, a little more than four percent were affiliated with a California hospital associated with a university, a little more than four percent were affiliated with a non-California university, a little more than four percent were affiliated with an advocacy organization, four percent were affiliated with a private clinic, and two percent were affiliated with *other*.

Question 2c examined cited sources level of public medical authority. Results revealed that 39 percent of public servants who served as medical/health sources worked at the state level, 30 percent of public servants who served as sources worked at the county level, and 20 percent of public servants who served as sources worked at the federal level of government. The types of public medical authority cited in articles by the media outlets with national and regional reach were also examined separately. In the *Los Angeles Times* 39 percent of the cited public servants who served as medical sources worked for the state, 27 percent of public servants worked for the federal government, and 23 percent of public servants worked for the county level of government. In the *Marin Independent Journal*, 42 percent of public servants who were cited as medical sources worked for a county, 39 percent of cited public servants worked for state, and nine percent of cited public servants worked for the federal government.

Question 2d examined what types of laypersons were most often cited as sources. Results revealed that 65 percent of laypersons were cited as pro-vaccination parents, 20 percent of laypersons were cited as anti-vaccination parents, and 17 percent were cited as *other*. These types of sources that fell under *other* included: educators or school administrators and unimmunized children. The types of laypersons cited in articles by the media outlets with national and regional reach were also examined separately. In the *Los Angeles Times*, 67 percent of cited laypersons were pro-vaccination parents, 21 percent of cited laypersons were anti-vaccination parents, and 12 percent of the cited laypersons were cited as *other*. In the *Marin Independent Journal*, 58 percent of laypersons were cited as pro-vaccination parents, 25 percent of laypersons were classified as *other*, and 17 percent of laypersons were cited as anti-vaccination parents.

Research question 3 examined what types of sources were allowed to make blame attributions for the measles outbreak. Results revealed 49 percent of privileged sources were cited as public health officials, 27 percent were cited as medical authorities, 24 percent were cited as government officials, 16 percent were cited as pro-vaccination parents, three percent were cited as academic journals, and three percent were cited as university-led experts. Nineteen percent were cited as *other*, which included educators or school administrators and the media. Results also revealed that neither anti-vaccine advocates nor anti-vaccine parents were privileged sources. The types of privileged sources cited in articles by the media outlets with national and regional reach were also examined separately. In the *Los Angeles Times*, 32 percent of privileged sources were cited as public health officials, 19 percent were cited as medical authorities, 19 were cited as *other*, 14 percent were cited as government officials, 11 percent were cited as pro-vaccination parents, three percent were cited as academic journals, and three percent were cited as university-led experts. In the *Marin Independent Journal* results revealed that 40 percent of privileged sources were cited as public health officials, 27 percent of privileged sources were cited as government officials, 20 percent were cited as medical authorities, and 13 percent were cited as pro-vaccination parents.

Discussion

The 2015 California measles outbreak provides communication scholars an opportunity to examine how the media construct narratives of health crises. Journalists often construct simplistic, episodic narratives that frame the health context in a way meant to increase public understanding. Everyone seeks understanding and uncertainty reduction in times of crisis; therefore, journalists often include blame attributions in their coverage in an attempt to isolate responsibility and forward the narrative. Blame narratives represent a key element of journalistic content that focuses on conflict. In an effort to track events and their repercussions, such as a disease outbreak, journalists use blame as a mechanism for determining responsibility (Wyatt, 2012). As such, journalistic content sets forth meta-narratives of opposition, thereby providing a schema for message framing (Seale, 2003). A schema of message framing that employs blame is apparent in many health messages and media coverage about health issues (Oh & Zhou, 2012).

Moreover, journalists cite social actors that help make sense of the health crisis and make attributions of blame. Science and medical professionals are prominent sources within media messages, cited for their specialized expertise, knowledge, and institutional authority (Shepherd, 1981; Conrad, 1991; Boyce, 2006). Media's use of medical professionals as sources fits a pattern of privileging elite and accredited sources, particularly in a political realm (Cross, 2010). Not only do medical professionals serve as authorities providing information, but they also act as sources who have the authority to make attributions of blame in cases of health-related events (Leask & Chapman, 2002). In contrast, media depictions of disease marginalize laypersons and patients; medical authorities are used more commonly as sources to address issues that affect laypersons

(Johnson, Sionean & Scott, 2011; Conrad, 1991). This imbalance in the presentation of sources reinforces the apparent source credibility of medical authorities and diminishes the credibility of laypersons.

Previous research demonstrates that medical authorities are often privileged sources allowed to shape public understanding in media contexts. Building on past research, this investigation used the 2015 California measles outbreak to examine blame attributions, medical authority as sources, and how those two variables coalesce to increase public understanding in the context of a vaccine-preventable outbreak. Thus, this study seeks to reveal how blame attributions can frame the perceived causes of vaccine-preventable outbreaks and highlights which actors are depicted in media coverage as perpetuating or solving a public health crisis.

Findings

Research question 1 asked how media coverage framed attribution of blame for the measles outbreak and research question 1a asked how media coverage framed attribution of blame for individuals verses systems. Results showed that individuals were blamed more often than systems in news coverage about the measles outbreak. Further breakdown revealed that this finding was particularly prominent in the *Los Angeles Times*, in contrast with the *Marin Independent Journal*. Research question 1b asked what kinds of individuals were blamed. Of the individuals who were blamed, the most frequent blame attribution was directed toward unimmunized individuals in both media outlets with a national and regional reach. However, disparities existed between the amount of blame attribution directed toward other individuals in a media outlet with a national reach in comparison with a media outlet with a regional reach. Specifically, anti-vaccination

parents were the targets of more blame attributions in the *Los Angeles Times* than in the *Marin Independent Journal*. Similarly, international unimmunized travelers were also the targets of more blame attributions in the *Los Angeles Times* than in the *Marin Independent Journal*.

Research question 1c asked what kinds of systems were blamed within the news coverage of the outbreak. Results revealed a strong distinction between the primary system blamed in a media outlet that reached a national audience in contrast with an outlet that reached a regional audience. The anti-vaccination movement was the primary system blamed in the *Los Angeles Times*, whereas the state legislature was the primary system blamed in the *Marin Independent Journal*. In sum, results showed that the common trend in blame attribution targeted individuals rather than systems; but, some of the types of individuals and systems targeted differed based on the reach of the media outlet.

Research question 2 asked what types of sources were cited in the media coverage of the measles outbreak. Results showed that public health officials and medical professionals were the most prominent sources for media outlets that reached a national and regional audience. The *Los Angeles Times* presented these two sources more equally than the *Marin Independent Journal*, where public health officials were the most dominant source cited. The *Marin Independent Journal* relied more heavily on elected government officials as sources.

Research question 2a asked what type of credentials was cited for medical sources. Results revealed that most sources were credentialed as public health officials, medical doctors, or pediatricians in media outlets with national and regional reach. These

results are consistent with source type results. Additionally, results showed that professors were the fourth-most common credentialed sources, cited in all articles. Research question 2b asked what types of affiliations were cited for sources of medical authority. Most sources were affiliated with either a department of health (be it city, county, or state) or a government agency. These affiliation results are consistent with the prominence of public health officials as a central source in news articles about the measles outbreak. The presence of these affiliations was particularly strong in the *Marin Independent Journal*. In the *Los Angeles Times*, a private clinic and a California university emerged as other common affiliation types. Research question 2c asked which public medical authority level was most often cited. In consideration of the level of public authority of sources, the *Marin Independent Journal* favored county and state public health employees as sources, while the *Los Angeles Times* favored state and federal level public health employees primarily as sources.

Research question 2d asked what types of laypersons were most often cited. Analysis of layperson sources determined that pro-vaccination parents were cited most often. Of the layperson sources, pro-vaccination parents were cited much more frequently than anti-vaccination parents, and this result was consistent across both examined media outlets.

Research question 3 asked what types of sources were used to make blame attributions. Public health officials were the most commonly cited source and they also represented the most common source privileged with the authority to make blame attributions, followed by medical authorities, and government officials. However, in the *Marin Independent Journal*, the frequency of government officials who acted as

privileged sources exceeded the frequency of medical professionals who acted as privileged sources. This result is consistent with the types of sources featured in this outlet. In both outlets, anti-vaccination parents were never presented with the authority to make blame attributions, but pro-vaccination parents were. Articles in the *Los Angeles Times* presented a greater diversity of privileged sources than the *Marin Independent Journal*, and included an academic journal and university-led experts.

Implications

Blame Attributions. The media attributed more blame to individuals than systems, which created a narrative that presented the measles outbreak as emblematic of a breakdown in social responsibility, as a result of individuals' actions. The *Los Angeles Times* framed unimmunized individuals and anti-vaccination parents as largely responsible for the outbreak. Conversely, the *Marin Independent Journal*'s lower number of blame attributions directed at individuals—including anti-vaccination parents—may be a result of Marin County's documented levels of high vaccine refusal, evidenced in the number of doctor-approved vaccine exemptions provided to schools in lieu of vaccination requirements. This result suggests that the outlet was hesitant to castigate members of its readership and the immediate community, particularly after being dubbed the epicenter of the anti-vaccination movement. In turn, blame attributions directed toward the anti-vaccination movement as a systemic entity were also absent in the *Journal's* coverage. Instead, the state legislature was the only system blamed. As such, the state legislature was blamed for allowing personal exemptions from vaccine requirements. These media representations sidestep the direct agency of individuals in the community, belie their participation or contribution to a public health crisis, and shift the focus of responsibility.

To that end, the immediate readership of the *Los Angeles Times* is not Marin County and the surrounding Bay area, which together boast high levels of personal exemptions. As such, this media outlet did not express the same hesitancy as the *Marin Independent Journal* in its attributions of blame toward individuals. Instead, the *Los Angeles Times* chose to identify vaccine refusal that happened on an individual level as a patterned response indicative of the anti-vaccination movement. This media representation of blame represents on one hand a holistic way of assessing a large-scale problem, which is not confined to just Marin County, and on the other hand, it loses sight of the reasons individuals, such as parents in Marin County, might choose to take advantage of personal exemptions from vaccine requirements. Additionally, the *Los Angeles Times* exhibited a greater propensity than the *Marin Independent Journal* to blame the outbreak on non-natives, in other words, unimmunized international travelers who served as carriers for measles. This blame attribution is consistent with previous studies of disease outbreaks, which also attributed responsibility for disease transmission to non-natives or an *other* (Eichelberger, 2007; Abeysinghe & White, 2011; Oh & Zhou, 2012).

In sum, the use of blame attributions in these two outlets reinforces the tendency for news outlets to use episodic framing that depends on narratives of personal responsibility and individual blame. However, the news outlet that reaches a national audience displayed coverage trends that aligned more often with established trends in newspaper coverage of vaccine-preventable outbreaks in comparison with the news outlet that reached a regional audience.

Source. With regard to source, the results reveal the strong presence of public health professionals, medical professionals, and government officials as sources in newspaper coverage of a public health crisis. These results reinforce documented trends to privilege so-called *elite* sources in media coverage, particularly regarding scientific or medical issues (Boyce, 2006; Conrad, 1991; Cross, 2010). The diversification of the cited credentials of medical sources aligns with the increased specialization of medicine as a form of professional dominance and a means of asserting medical authority, thereby reinforcing an elite status (Freidson, 1970). Similarly, *elite* sources are used in news coverage in part because of their affiliation with accredited institutions (Cross, 2010). The cited affiliations documented by this study reveal the strong presence of sources that receive public funding and that are based in California. While nationally recognized sources such as the CDC were cited, other nationally recognized private sources such as the Mayo Clinic were not. The emphasis on California-based sources and sources affiliated with a government entity (be it city, county, state, or federal) suggest an exclusivity in who was allowed to participate in both controlling and commenting on the public health crisis.

The exclusivity of source choice also suggests a departure from a landscape in which individual medical providers and organized medical providers have an established role in government and public administration (Taylor, 1960). Taylor documented *organized medicine's* established involvement with the administration of health departments as an involvement that provided "expert advice, technical knowledge, and [a] liaison with medical or lay groups" (p. 121). The results of this content analysis reveal an emphasis not on the relationship Taylor described between health departments and

organized medical professionals, but rather on the relationship between health departments and the community at risk of contracting measles. In fact, according to examined media representations, it was the health departments and their staff of public health professionals that provided the *expert advice*, *technical knowledge* and served as a *liaison* with infected patients and surrounding communities. Thus, this study reveals the emergence of the autonomy and individual authority of public health professionals, in lieu of medical professionals formally unconnected with the government and public administration. This autonomy may represent a form of de-medicalization, as the dominance of medical professionals diminishes. Ultimately, the authority and source credibility of public health professionals is reified by their cited presence in media representations of a public health crisis.

The transition from the use of medical professionals as sources to the emerging prominence of public health professionals and government officials as media sources in health affairs was crystallized in the oft-cited source Senator Richard Pan of Sacramento. His dual classification as both an elected government official and a medial authority, who trained and practiced as a pediatrician, provided him with a cachet unavailable to sources with one central credential or job function. His medical and elected official status enhanced his source credibility and enabled him to use the outbreak as the impetus for moving an issue from a medical sphere and then placing it at the center of state government legislative efforts. As such, he was awarded the authority to straddle two discourses—one medical and one political—and speak as an expert about both vaccination as a biomedical necessity and legislative efforts to increase vaccination. But,

he did so at the expense of parents who had used legislative loopholes to seek vaccine exemptions for their children.

Senator Pan's source credibility also enabled him to act as a privileged source with the authority to cast blame attributions. Likewise, the source credibility and elite status of public health officials and medical professionals who dominated the discourse of the 2015 California measles outbreak enabled them to assign responsibility to individuals and systems. However, the fact that the individuals who were blamed—such as anti-vaccination parents or anti-vaccination advocates—were never cited as privileged sources suggests that the media remained distant from the people and systems thought to create and perpetuate the public health crisis. Instead, they relied on expert commentary to forward a narrative of episodic framing. Additionally, this expert commentary often omitted emotional appeals or failed to attempt to humanize the targets to whom blame for the outbreak was assigned.

Limitations

This study was limited by its examination of only two media outlets. The fact that the *Marin Independent Journal* was included in this study may have biased general results, because the journalists were aware that many readers had sought personal exemptions from vaccination requirements, and thus, the journalists may have altered story framing to reflect the beliefs and opinions of the paper's readership. The benefits of including this unique outlet in the analysis arguably outweigh the costs. Moreover, this study also only considered news articles and eliminated other content, such as letters to the editor, opinion editorials, or content only available digitally. Whereas limiting the

scope of an investigation is vital for effective content analysis, these other types of media would have likely enriched the current findings.

The coding of two variables, type of laypersons and privileged sources, presented results in which the category *other* exceeded ten percent. This result demonstrates that the categories for these two variables were neither comprehensive nor exhaustive. In particular, the variable privileged source omitted categories for educators/school administrators and the media. The inclusion of both of these categories would decrease the amount that *other* was cited. Similarly, the variable laypersons did not offer a category for educators, who were often quoted for information about vaccine exemptions per school to understand who may have been at risk in the outbreak. The limited coding of these variables led to opaque results that the inclusion of additional categories would have clarified.

Recommendations

Professional Applications. The increased prominence of public health and government officials in newspaper coverage reflects both an opportunity and a challenge for communication professionals. Public relations for these entities—both public health and government—are important; however, news coverage of this outbreak demonstrates that improvement can be made. Because public health and government officials are seen as having source credibility, and are often cited in news coverage, information they wish to communicate can become readily visible. As such, in the event of a health affairs issue or health crisis, communication professionals who work for a public health entity or government agency have a responsibility to make sure that experts and officials provide accurate information, particularly when cited in the media. Rather than focusing on

assigning responsibility for a health crisis or using a fear-based appeal, communication content needs to focus on recommendations for handling an existing health situation and provide actionable steps for executing recommendations. Accordingly, *elite* sources must be trained by communication professionals to focus more on information and less on blame and judgment. Information should focus on actionable steps the public can take to respond to a public health crisis.

Acting as an expert-source also provides an opportunity to enhance source credibility, namely by improving or demonstrating trustworthiness. To that end, both communication professionals and journalists should consider humanizing patients and other people at risk of infection. Journalists' tendency to use primarily elite sources perpetuates a specific type of narrative that marginalizes the experiences of laypersons, and in this case study, the experiences of anti-vaccination parents and their unimmunized children.

The measles outbreak illustrates the need not only for communication professionals to develop campaigns to address acute crises, but also for health communication professionals to develop campaigns proactively that anticipate health crises and advocate for preventative health measures. For instances, health communication professionals could focus on disseminating information on vaccines and vaccine-preventable diseases.

Academic Research Recommendations. To provide a representative sample of media representations of vaccine-preventable outbreaks, future researchers should consider including additional outlets that have different levels of reach. For instance, other major news publications such as *USA Today*, *The Wall Street Journal*, and *The New*

York Times would likely provide a different perspective on the central elements of this study. In the case of the current investigation, these outlets would offer perspectives from other parts of the country about a health crisis experienced primarily by one west coast state. Researchers could also consider the possibility of including international coverage about the outbreak and compare international coverage of the outbreak with U.S.-based coverage. For instance, researchers could consider comparing coverage of a 2014 British Columbia measles outbreak with coverage of the 2015 California measles outbreak. Additionally, researchers could consider contrasting journalistic content from countries with different vaccination standards with U.S. journalistic content.

Future research could consider the role that alternative medicine plays in the controversy over vaccination. The current study focused on credentialed medical authorities affiliated with mainstream medicine, and did not consider the role naturopaths, chiropractors, and other alternative medicine practitioners play as either a source or blame target. Future research should also consider audience effects and how news coverage of the measles outbreak affected reader's perceptions of the outbreak and the anti-vaccination controversy. For instance, research on audience effects could consider how source credibility affected confidence in medical authorities during public health crises.

Additionally, future research should also investigate the use of blame attributions in media. In the act of assigning blame within the news, privileged sources can define blame targets as the cause of a social problem and may even suggest that reform of the target is the only remedy. As such, privileged sources may actively diagnose social problems to the detriment of a target. Future research should consider how privileged

sources' blame-laden social diagnostics affect the accuracy of an event's news portrayal and the audience's perception of—and potential social response to—an event's central actors. Further, the act of blaming may affect a privileged source's perceived expertise and elite status—either elevating it or diminishing it for both a reader and a source's immediate professional community. Just as Collins and Evans (2002) have categorized sources based on their level—or lack of—expertise to create a theory of expertise, new research should seek to categorize sources privileged with casting blame attributions. This research could seek to understand and differentiate between which types of expert knowledge and prestige, among other attributes, enable elites in realms other than a medical context to assign blame.

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Appendix A: Codebook

Research Questions

RQ1: How did media coverage frame attribution of blame for the measles outbreak?

1a. How did media coverage frame attribution of blame for individuals verses systems? [D]

1b. When the media attributed blame, what kinds of individuals were blamed? [E]

1c. When the media attributed blame, what kinds of systems or institutions were blamed? [F]

RQ2: What types of sources were privileged in the media coverage of the measles outbreak? [G]

2a. What type of credentials were cited for medical sources? [H]

2b. What types of affiliations were cited for medical authorities? [I]

2c. Which public medical authority level (local, state, or federal) was most often cited? [J]

2d. What types of layperson were most often cited? [K]

RQ3: What types of sources were used to make blame attributions for the measles outbreak? [L]

Codebook

A. **Article ID:** Each article will be given an assigned number. The coder will write the number as it appears on the article. A sample of X articles will be coded. Each article will have an assigned number of 1-X located at the top of the article above the headline.

B. **Article Source**

C. **Date**

D. **Dominant Frame attribution of blame for individuals verses systems:** This variable reflects the dominant frame attribution of blame per article vis-à-vis who was largely held responsible. Often, both individuals and systems may be blamed, and attributions for these separate frames present in a single article. Thus, upon reading an article, and coding for section E. (blamed individuals) and F. (blamed systems), consider the article in its totality to determine the dominant frame attribution. If it is unclear, count the number of instances an individual such as "parents" is referenced in comparison to systems, and choose the frame with the most references. Consider using context and also the headline to choose only one frame attribution.

0) **Individuals**
1) **Systems**

E. Kinds of blamed individuals

Read through the entire selected article to determine what types of individuals (if any) were blamed for the measles outbreak. Code only for explicit attributions of blame. In essence, when the article clearly states that a specific individual is to blame or is responsible, then code for the type of individual blamed. If the article attributes responsibility or attributes origin of the measles outbreak to an individual, then code that individual as a blamed individual. This section should code for blaming for the measles outbreak only, and not for a related issue such as general vaccine safety. If the article includes multiple blame attributions for a single individual, do not repeat the code for that individual—only code once for each blamed individual per article.

1) **Anti-vaccination parents**: Parents who purposefully choose not to vaccinate their children. The term *parents* includes families, single parents, and child guardians, and does not include these parents' unvaccinated children.
2) **Unimmunized international travelers**: Travelers who are not native to the United States and who may not be immunized, because their native county has different immunization regulations. Article text that references disease origin from *overseas*, diseases that are *imported*, and the Philippines, should be coded as 2.
3) **Measles patients**: Individuals who contract measles and unknowingly expose other individuals to the disease.
4) **Unvaccinated students**: Grade-level students, including kindergarten through college-age level students enrolled in a public or private institution.
5) **State-elected officials**: State government officials who have gained their political office through a state-based election. (e.g. state senators, congressmen, and governors)
6) **Other**: Individuals who are otherwise not described by the descriptions above.

F. Kinds of blamed systems or institutions

Read through the entire selected article to determine what systems or institutions (if any) were blamed for the measles outbreak. Code only for explicit attributions of blame and attributions of disease origin for the measles outbreak. If an article includes multiple blame attributions for a single system or institution, do not repeat the code for that system or institution—only code once for each blamed system or institution per article.

1) **The media**: The media is a generic term that bears an association with agencies and organizations that produce news and other journalistic content. Journalistic content platforms include print, online or digital, and TV formats. The media includes the content, the company that produces the content, and the individual journalists and other related staff that create news coverage content.

2) **State legislature**: State legislative activity separate from the state government officials who create said activity. (e.g. legislation permitting exemption from vaccination; bill intended to eliminate exemption)
3) **Government** (generic): Includes government bodies that are not specified as one of the two public service/government sources above.
4) **Disneyland**: The Anaheim, California theme park where the measles outbreak originated.
5) **Society**: Generic term for the population at large, which includes parents, families, and individuals grouped together as an entity. It does not include individuals directly involved with the media, government, or the medical community.
6) **Science/Medicine**: The medical community, which includes individual doctors and medical organizations, as well as medical recommendations, such as immunization guidelines. Science is characterized as the help-mate of the medical community and the generic progenitor of medical advances, including immunization treatments.
7) **Anti-vaccination movement**: The movement as an entity, rather than individuals. The anti-vaccination movement entails the aggregate collection of people, resources, and organizations who advocate against recommended or compulsory immunization.
8) **Schools**: Schools, both public and private, that must comply with state-based legislation requiring student vaccination. (e.g. charter schools)
9) **Other**: A system other than one of the systems described above.

G. Type of Source

Read through the article and code for the type of sources that are cited. Note that this study is interested in sources with medical authority in particular. Therefore, unless an elected official has a form of medical authority, he or she should not be considered a type of source.

1) **Public health personnel/professional**: A professional who works day-to-day examining and monitoring the community impact of disease patterns. This professional may be called simply a public health officer, have a more specific designation, such as an epidemiologist.
2) **Medical professional**: Someone trained in practicing medicine; this description may include both a doctor and a nurse.
3) **Scientist**: A professional who focuses on building and expanding research in the academic field of science and is a knowledge expert in at least one area of science. Professionals cannot be both scientists and either medical professionals or professors; here, the distinction is often a result of affiliation.
4) **CDC**: The Centers for Disease Control and Prevention; it is a major operating organization of the federal Department of Health and Human Services.
5) **Professor**: A professional who works at a university or college as a researcher and teacher, and is considered an expert in a specific academic field or area of study.
6) **Other**: A source not captured in the aforementioned descriptions.

H. Cited Credentials of Cited Sources

Code for the credentials (akin to the professional expertise) listed for all cited medical sources within each article. If two types of credentials are listed, such as a pediatrician and an infectious disease expert, use the first credential listed. Public health expertise is considered a medical subject, for the purpose of coding professor of medical and non-medical subjects. Only code for explicitly stated credentials; do not infer credentials of sources. This section primarily applies to people, and not organizations as an entity.

1) **Public health official/officer**: This is a generic term used to specify a professional who works in a public health capacity.
2) **Epidemiologist**: A public health worker whose specialty is epidemiology.
3) **Infectious Disease Expert**: A cited medical authority who specializes in infectious diseases.
4) **Pediatrician**: A medical doctor whose practice emphasizes medical care for children and infants.
5) **MD, general practitioner**: A generic medical doctor descriptor that does not specify a professional specialty or medical emphasis.
6) **Emergency Physician**: A medical doctor who works exclusively in an emergency room context.
7) **RN**: A registered nurse.
8) **Professor of medical subject**: A medical authority who is confined to academics and the realm of the university, not the clinic, in a professorial capacity.
9) **Professor of non-medical subject** An academic who specializes in a non-medical subject, but whose expertise is used to describe the context of the outbreak. (e.g. professor of political science).
10) **Other**: A source who is not described by any of the above definitions.

I. Affiliations of Cited Medical Authorities

Determine what types of professional affiliations cited sources have and apply the code descriptions below.

1) **Department of Public Health:** The public health department for a state or other municipality, including a county or city. Examples include the California Department of Public Health, which is a multi-layered public organization; for instance, the California Center for Infectious Disease is considered part of the CDPH and should be coded so accordingly.
2) **California hospital**: A not-for-profit hospital based in California that is not affiliated with an academic university.
3) **California hospital affiliated with a university**: A California-based hospital with a stated university affiliation, thereby indicating academic resources, medical teaching staff, and extended research capacities as a medical entity.

4) **Non-California hospital**: A not-for-profit hospital that is not based in California and also does not qualify as an academic medical center, such as the Mayo Clinic or Cleveland Clinic.
5) **Non-California hospital affiliated with a university**: A hospital, which is not based in California, and with has a stated university affiliation, thereby indicating academic resources, medical teaching staff, and extended research capacities as a medical entity.
6) **California university**: A public or private university based in California.
7) **Non-California university**: A public or private university not based in California.
8) **Governmental agency/department affiliation**: A non-local health-based medical group or agency that is government-based and is not considered one of the organizations above. (e.g. the National Vaccine Advisory Committee is part of the governmental agency Health and Human Services and would be coded as 9)
9) **Advocacy organizations**: An organization with a specific mission or purpose that advocates and directs resources on behalf of this mission, such as increased immunization. (e.g. California Immunization Coalition)
10) **National clinic**: Academic medical centers that are not restricted to one geographic center or state. (e.g. Mayo Clinic or Cleveland Clinic)
11) **Private clinic**: A clinic that is not affiliated with a hospital and operates independently.
12) **Other**: An affiliation not described above.

J. Level (local, state, or federal) of Public Medical Authority

If the medical authority is a public official, code for the level of authority on a local, state, or federal level. For instance, for a state-based epidemiologist, code 3, and for an Orange County epidemiologist, code 1. If a generic term, such as public health official, is used, code 5.

1) **County**: Cited public medical authority who works at the county level, particularly a county within California. (e.g. Orange County Health Agency)
2) **City**: Cited public medical authority who works for a designated city as distinct from the county level.
3) **State**: Cited public medical authority who works at the state level. (e.g. California)
4) **Federal**: Cited public medical authority who works at the federal level and is non-specific to a locale within the United States or California. (e.g. Centers for Disease Control and Prevention, National Institutes of Health)
5) **Not stated**: While the cited medical authority is designated as "public," no further assignation is made regarding this public authority's level of jurisdiction.
6) **Other**: Any public medical authority who is not otherwise captured by the descriptions above.

K. Type of Cited Layperson

Determine which types of laypersons are cited within the article sample as sources and apply the codes below accordingly for each instance a layperson is cited.

1) **Parent who chooses to immunize his/her child**: A parent, or set of parents in the plural sense, assigned with no special professional capacity or other credentials, and who supports immunization through verbal agreement and expression, or vaccine compliance.
2) **Parent who intentionally chooses not to immunize his/her child:** A parent, or set of parents in the plural sense, assigned with no special professional capacity or other credentials, and who does *not* support immunization through verbal agreement or expression, or vaccine compliance.
3) **International Traveler**: Non-native traveler to the United States who is subject to different health care standards, including immunization standards.
4) **Other**: A layperson not captured by the above definitions.

L. Privileged Sources

Read the sample articles to determine not simply who is cited as an authority, but rather who is given authority to cast blame attributions upon selected people and parties. For each article code for whom or what is privileged with the authority to make blame attributions. This section goes beyond considering who or what is a source, and focuses on who actually makes blame attributions, noting that articles may contain more than one "blamer."

1) **Academic journal**: An academic journal, with a peer-review editorial process, that publishes the original research of academic professionals. (e.g. *Journal of the American Medical Association Pediatrics Journal*, *The Lancet*)
2) **University-led medical experts**: Sources of medical authority linked with a university. (e.g. Harvard University)
3) **Anti-vaccination advocate organizations**: Formal organizations that support the resistance of immunization guidelines and regulations through organized expression and through the exercise of monetary resources.
4) **Public health officials**: A generic term indicating sources of medical authority that are associated with, or otherwise employed, by public service organizations, such as the California Department of Public Health.
5) **Medical authorities:** Sources of medical authority who do not qualify as public health officials. Medical authorities may include private doctors, or another type of medical professional not captured in the aforementioned descriptions.
6) **Government officials**: Government officials who are employed by a public service agency, such as the California state government, but are not affiliated directly with the public health department. The designation government official includes state senators and governors.
7) **Parents who are pro-vaccination**: Parents who have indicated pro-vaccination beliefs through verbal expression and/or vaccine compliance.
8) **Parents who are anti-vaccination**: Parents who have indicated anti-vaccination beliefs through verbal expression and/or vaccine non-compliance.

9) **Other**: Sources who are not described in any of the above descriptions.

M. Regional/National Newspaper Article

Code for the article's readership base. Does it reach a larger national audience beyond the immediate vicinity in which it is printed and distributed, then code 1. For local or regional newspapers, code 0.

0) Regional
1) National

Appendix B: Results

Table 1

Dominant Blame Frame in Both Outlets

Blame Frame	n	M
System or Individual	39	74%
Individual	30	57%
System	9	17%

Table 2

Dominant Blame Frame in *Los Angeles Times*

Blame Frame	n	M
System or Individual	27	84%
Individual	22	69%
System	5	16%

Table 3

Dominant Blame Frame in *Marin Independent Journal*

Blame Frame	n	M
System or Individual	12	57%
Individual	8	38%
System	4	19%

Table 4

Type of Blamed Individuals in Both Outlets

Individual	n	M
Unimmunized Individual	33	85%
Anti-Vaccination Parents	14	36%
International Unimmunized Traveler	8	21%
Measles Patient	5	13%
Elected Officials	0	0%
Other	0	0%

Table 5

Type of Blamed Individual in *Los Angeles Times*

Individual	n	M
Unimmunized Individual	23	85%
Anti-Vaccination Parents	11	41%
International Unimmunized Traveler	7	26%
Measles Patient	4	15%
Elected Officials	0	0%
Other	0	0%

Table 6

Type of Blamed Individual in *Marin Independent Journal*

Individual	n	M
Unimmunized Individual	10	83%
Anti-Vaccination Parents	3	25%
International Unimmunized Traveler	1	8%
Measles Patient	1	8%
Elected Officials	0	0%
Other	0	0%

Table 7

Systems Blamed in Both Outlets

System	n	M
State Legislature	13	33%
Anti-Vaccination Movement	7	18%
Disneyland	4	10%
Science/Medicine	2	5%
Society	2	5%
Media	1	3%
Schools	1	3%
Government	0	0%
Other	0	0%

Table 8

Systems Blamed in *Los Angeles Times*

System	n	M
Anti-Vaccination Movement	7	26%
Disneyland	4	15%
State Legislature	4	15%
Science/Medicine	2	7%
Society	2	7%
Media	1	4%
Schools	1	4%
Government	0	0%
Other	0	0%

Table 9

System Blamed in *Marin Independent Journal*

System	n	M
State Legislature	9	75%

Table 10

Type of Source in Both Outlets

Source	n	M
Public Health Official	65	43%
Medical Professional	45	30%
Professor	13	9%
CDC	12	8%
Elected Government Official or Spokesperson	12	8%
Scientist	3	2%
Other	3	2%
Total Sources	153	

Table 11

Type of Source in *Los Angeles Times*

Source	n	M
Public Health Official	40	27%
Medical Professional	35	23%
Professor	10	7%
CDC	9	6%
Elected Government Official or Spokesperson	5	3%
Other	3	2%
Scientist	2	1%
Total Sources	104	

Table 12

Type of Source in *Marin Independent Journal*

Source	n	M
Public Health Official	25	63%
Medical Professional	10	25%
Elected Government Official or Spokesperson	7	18%
CDC	3	8%
Professor	3	8%
Scientist	1	3%
Total Sources	49	

Table 13

Type of Credentials in Both Outlets

Credentials	n	M
Public Health Official	34	26%
Medical Doctor (MD)	30	23%
Pediatrician	25	19%
Professor of Medical Subject	14	11%
Epidemiologist	10	8%
Infectious Disease Expert	10	8%
Other	6	4%
Registered Nurse (RN)	2	1%
Emergency Physician	0	0%
Professor of non-Medical Subject	0	0%
Total	131	

Table 14

Type of Credentials in *Los Angeles Times*

Credentials	n	M
Public Health Official	21	24%
Pediatrician	19	22%
Medical Doctor (MD)	18	20%
Professor of Medical Subject	10	11%
Epidemiologist	9	10%
Infectious Disease Expert	7	8%
Other	3	3%
Registered Nurse	1	1%
Emergency Physician	0	0%
Professor of non-Medical Subject	0	0%
Total	88	

Table 15

Type of Credentials in *Marin Independent Journal*

Credentials	n	M
Public Health Official	13	30%
Medical Doctor (MD)	12	28%
Pediatrician	6	14%
Professor of Medical Subject	4	9%
Other	3	7%
Infectious Disease Expert	3	7%
Epidemiologist	1	2%
Registered Nurse (RN)	1	2%
Emergency Physician	0	0%
Professor of non-Medical Subject	0	0%
Total	43	

Table 16

Type of Source Affiliations in Both Outlets

Affiliation	n	M
Department of Health	59	42%
Government Agency	28	20%
California University	12	9%
Private Clinic	12	9%
California Hospital affiliated with a University	9	6%
Advocacy Organization	6	4%
Non-California University	6	4%
Other	5	4%
Non-California Hospital	3	2%
Non-California Hospital affiliated with a University	1	1%
Total	141	

Table 17

Type of Source Affiliation in *Los Angeles Times*

Affiliation	n	M
Department of Health	35	37%
Government Agency	18	19%
Private Clinic	10	11%
California University	9	9%
California Hospital affiliated with a University	7	7%
Non-California University	4	4%
Advocacy Organization	4	4%
Other	4	4%
Non-California Hospital	3	3%
Non-California Hospital affiliated with a University	1	1%
Total Affiliations	95	

Table 18

Type of Source Affiliation in *Marin Independent Journal*

Affiliation	n	M
Department of Health	24	52%
Governmental Agency	10	22%
California University	3	7%
California Hospitals Affiliated with a University	2	4%
Non-California University	2	4%
Advocacy Organization	2	4%
Private Clinic	2	4%
Other	1	2%
Total Affiliations	46	

Table 19

Level of Public Authority in Both Outlets

Level	n	M
State	35	39%
County	27	30%
Federal	18	20%
Not Stated	7	8%
City	2	2%
Other	0	0%
Total	89	

Table 20

Level of Public Authority in *Los Angeles Times*

Level	n	M
State	22	39%
Federal	15	27%
County	13	23%
Not Stated	4	7%
City	2	4%
Other	0	0%
Total	56	

Table 21

Level of Public Authority in *Marin Independent Journal*

Level	n	M
County	14	42%
State	13	39%
Federal	3	9%
Not Stated	3	9%
City	0	0%
Other	0	0%
Total	33	

Table 22

Layperson Cited in Both Outlets

Type	n	M
Pro-Vaccination Parent	29	64%
Anti-Vaccination Parent	9	20%
Other	7	16%
International Traveler	0	0%
Total Laypersons	45	

Table 23

Layperson Cited in *Los Angeles Times*

Type	n	M
Pro-Vaccination Parent	22	67%
Anti-Vaccination Parent	7	21%
Other	4	12%
International Traveler	0	0%
Total Laypersons	33	

Table 24

Laypersons Cited in *Marin Independent Journal*

Type	n	M
Pro-Vaccination Parent	7	58%
Other	3	25%
Anti-Vaccination Parent	2	17%
International Traveler	0	0%
Total Laypersons	12	

Table 25

Privileged Sources in Both Outlets

Privileged Source	n	M
Public Health Official	18	49%
Medical Authority	10	27%
Government Official	9	24%
Other	7	19%
Pro-Vaccination Parent	6	16%
Academic Journal	1	3%
University-Led Experts	1	3%
Anti-Vaccine Advocate	0	0%
Anti-Vaccine Parents	0	0%
Total Sources	52	

Table 26

Privileged Sources in *Los Angeles Times*

Privileged Source	n	M
Public Health Official	12	32%
Medical Authority	7	19%
Other	7	19%
Government Official	5	14%
Pro-Vaccination parents	4	11%
Academic Journal	1	3%
University-Led Experts	1	3%
Anti-Vaccine Advocate	0	0%
Anti-Vaccine Parents	0	0%
Total Sources	37	

Table 27

Privileged Sources in *Marin Independent Journal*

Source Type	n	M
Public Health Official	6	40%
Medical Authority	3	20%
Government Official	4	27%
Pro-Vaccination Parent	2	13%
Academic Journal	0	0%
University-Led Experts	0	0%
Anti-Vaccine Advocate	0	0%
Anti-Vaccine Parents	0	0%
Other	0	0%
Total Privileged Sources	15	

Curriculum Vitae

Natalie Fullenkamp worked at the Peterson Institute for International Economics as a Marketing Assistant from 2008-2011 and at the Brookings Institution Press from 2011 to 2014. She is currently a doctoral student in Medical Sociology at the University of New Mexico.